AFCTN Test Report 94-018

AFCTB-ID 93-050

CALS TEST NETWORK

Technical Publication Transfer

Using:

Northrop Corporation's Data

MIL-D-028000A (IGES)
MIL-M-28001A (SGML)
MIL-R-28002A (Raster)
MIL-D-28003 (CGM)

Quick Short Test Report

18 May 1993

19960822 158

Prepared for
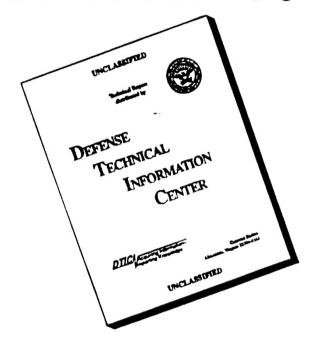
Electronic Systems Center

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Quick Short Test Report

18 May 1993

Prepared By
Air Force CALS Test Bed
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Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Northrop Corporation's interpretation and use of the CALS standards, in transferring technical publication data. Northrop used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 93-050

Date of Evaluation: 18 May 1993

Evaluator:
George Elwood
Air Force CALS Test Bed
DET 2 HQ ESC/AV-2P
4027 Colonel Glenn Hwy
Suite 300
Dayton OH 45431-1672

Data Originator:
John P. Kent
Northrop Corporation
B-2 Division
M/S L591/UB
8900 East Washington Blvd
Pico Rivera CA 90660
(310) 948-0624

Data Description:
Technical Manual Test
    3 Document Declaration files
    3 Document Type Definitions (DTD)
    3 Initial Graphics Exchange Specification
        (IGES) files
    3 Standard Generalized Markup Language
        (SGML) files
    1 Raster file
    5 Computer Graphics Metafile (CGM) files

Data Source System:
    1840

        HARDWARE

           Unknown
        SOFTWARE
           Unknown

IGES

    HARDWARE

        Unknown

    SOFTWARE

        Unknown

Text/SGML

    HARDWARE

        Unknown

    SOFTWARE

        Unknown

Raster

    HARDWARE

        Unknown

    SOFTWARE

        Unknown

CGM

    HARDWARE

        Unknown

    SOFTWARE

        Unknown

Evaluation Tools Used:

    MIL-STD-1840A (TAPE)

        SUN 3/280

            AFCTN *Tapetool v1.2.9 UNIX*

            XSoft *CAPS/CALS v40.4*

            Texas Instruments (TI) *Tapetool v1.0.1*

        PC 486/50

            AFCTN *Tapetool v1.2.9 DOS*

    MIL-D-28000 (IGES)

        Sun SparcStation 2

            Carberry *CADLeaf Plus v3.1*

            IGES Data Analysis (IDA) *Parser/Verifier v92*

            IDA *IGESView v3.05*

        PC 486/50

            AUTODESK *AutoCAD 386 R12*

            IDA *IGESView Windows*

    MIL-M-28001 (SGML)

        SUN SparcStation 2

            ArborText *ADEPT v4.2.1*

PC 486/50

        Exoterica *XGMLNormalizer v1.2e3.2*
        Exoterica *Validator v2.0 EXL*
        McAfee & McAdam *Sema Mark-it v2.3*
        Public Domain *sgmls*

MIL-R-28002 (Raster)

    SUN SparcStation 2

        ArborText *g42tiff*
        Carberry *CADLeaf Plus v3.1*
        AFCTN *validg4*
        AFCTN *calstb.475*
        IDA *IGESView v3.0*
        Island Graphics *IslandPaint v3.0*

    PC 486/50

        AFCTN *validg4*
        IDA *IGESView Windows*
        Inset Systems *HiJaak v2.1*
        Inset Systems *HiJaak Window v1.0*
        Software Publishing Corporation
                (SPC) *Harvard Graphics v3.0*
        Corel *Ventura Publisher*

MIL-D-28003 (CGM)

    SUN SparcStation 2

        ArborText *cgm2draw*
        Island Graphics *IslandDraw v3.0*
        Carberry *CADLeaf Plus v3.1*

    PC 486/50

        Advance Technology Center
                (ATC) *MetaView R 1.12*
        ATC *MetaCheck R 2.05*
        SPC *Harvard Graphics v3.05*
        Inset Systems *HiJaak v2.1*
        Inset Systems *HiJaak v1.0 Windows*
        Micrografx *Designer v3.1*
        Micrografx *Charisma v2.1*
        Corel *Ventura Publisher*

**Standards
Tested:**

    MIL-STD-1840A
    MIL-D-28000A
    MIL-M-28001A
    MIL-R-28002A
    MIL-D-28003

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with a magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. They were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool v1.2.9* utility. No errors were encountered while evaluating the contents of the tape labels.

The tape was read using XSoft's *CAPS read1840A* utility without any reported errors.

The tape was read using TI's *Tapetool v1.0.1* without any reported errors.

The physical tape structure meets the CALS MIL-STD-1840A requirements.

3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file and data file headers.

This portion of the tape meets the CALS MIL-STD-1840A requirements.

4. IGES Analysis

The tape contained three IGES files. These files were evaluated using IDA's *parser* and *verifier* set for CALS MIL-D-28000A Class I specification. This program had critical errors in all three IGES files and would not complete the processing. When checking the files it was noted that additional characters were inserted on the second line of the DE data, starting on line DE 8. This same type of additional numbers was carried throughout the entire file.

404	3	0	0	0	0	0	000000101D	5
404	0	0	1	0			D	6
106	4	0	1	0	0	0	000000001D	7
106214748364		2	2	11	11			
106	15	0	1	0	0	0	000000001D	9
106214748364		2	2	11	11			
106	26	0	1	0	0	0	000000001D	
106214748364		2	2	11	11			

It was also noted that the CALS conformance statement was found in the Start Section as required, but this statement addresses the CALS MIL-D-28000 instead of the most current CALS MIL-D-28000A specification.

The IGES files do not meet the CALS MIL-D-28000A specification.

5. SGML Analysis

The tape contained three Text and three DTD files. The three DTD files were duplicates with the exception of the graphics references. The references were all placed in one DTD file, and it was used for all parsing procedures.

The AFCTB has several parsers available for evaluating submitted DTD and Text files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. These products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default setting unless specified in the report. Changes to DTD or Text files required by each system are not documented in the report.

The Text and DTD files from the tape were evaluated using another parser available within the AFCTB, with no reported errors, but several warnings were issued. See the Appendix for the log files.

The Text and DTD files from this document were evaluated using the Exoterica *Validator* parser with 16 warnings issued.

The Text and DTD files from this document were tested using the Exoterica *XGMLNormalizer* parser with no errors reported.

The Text and DTD files from the tape were evaluated using McAfee & McAdam's *Sema Mark-it* parser with no errors reported.

The Text and DTD files from the tape were evaluated using the Public Domain *sgmls* parser with no errors reported.

The DTD and Text files were parsed without errors being generated. These files meet the CALS MIL-M-28001A specification.

6. Raster Analysis

The tape contained one Raster file. This file was evaluated using the AFCTN *validg4* utility. This program reported that the file meets the CALS MIL-R-28002A specification.

The file was read into the AFCTN *calstb.475* viewing utility. No problems were noted. The image was straight and no orphan pixels were noted.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The file was converted using ArborText's *g42tiff* utility without a reported error. The resulting file was read into Island Graphics' *IslandPaint*, displayed and printed.

The Raster file was read into Carberry's *CADLeaf* software without a reported error. The images were displayed and printed.

The file was read into IDA's *IGESView* and *IGESView for Windows* without a reported error.

The file was read into Inset Systems' *HiJaak for Windows* without a reported error.

The file was converted using Inset Systems' *HiJaak for DOS* into an IMG format without a reported error. The resulting file was read into Corel's *Ventura Publisher*, displayed and printed.

The Raster file was converted using Rosetta Technologies' *Prepare* without a reported error. The resulting file was read into Rosetta Technologies' *Preview*, displayed and printed.

The Raster file meets the CALS MIL-R-28002A specification.

7. CGM Analysis

The tape contained five CGM files. The files were evaluated using ATC's *MetaCheck* with CALS options. This utility reported that all five files meet the CALS MIL-D-28003 specification.

The CGM files were evaluated using the beta AFCTN *validcgm* utility. This program reported errors in all five files.

The AFCTB has several tools for viewing CGM files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor and indication of CALS capability. All operations were performed using the default settings.

The CGM files were converted using ArborText's *cgm2draw* utility without a reported error. The resulting files were read into Island Graphics' *IslandDraw*, displayed and printed. The displayed images had no color. Some overflow of text was noted in file D001C004.

The files were viewed using ATC's *MetaView* software. Errors were reported in files D001C004 and D001C008.

The files were read into Carberry's *CADLeaf* software and displayed. No errors were reported during the import process. The displayed images were in color. Some text overflow was noted in file D001C004.

The files were read into Inset Systems' *HiJaak for Windows* with reported errors. This program would not import any of the five files. The system reported a float point error and dropped out of the program.

The files were imported directly into Island Graphics' *IslandDraw* without a reported error. The displayed images were in color. Some text overflow and overlap was noted in files D001C004 and C008. Additionally, file D001C004 had two entities overflow the defined block.

The files were imported into the Micrografx *Designer* without a reported error. This program did not report any errors

during the import process, but did not display anything on the screen.

According to Michael Harrison of Micrografx, "Micrografx is aware of the problems associated with reading these files and is working on a solution to be implemented in a future release of our products."

The files were imported into SPC's *Harvard Graphics 3.05* with reported errors. Files D001C004 and C007 reported line style errors. Files D001C004, C005, and C006 reported entities not translated. Additionally, file D001C004 also reported adjustment of points and non-CGM entities encountered. The displayed images had color. None of the five CGM files were usable. See the Appendix for the hard copies.

The files D001C005, C006 and C007 were imported into Corel's *Ventura Publisher* without a reported error. File D001C004 and C008 would not import into the program due to bad file types being reported. When displayed, files D001C005, C006 and C007 were not usable. File D001C005 filled the screen until it was completely black. File D001C006 had large areas of black but some fine lines were visible. File D001C007 had one large black shape displayed in the center of the screen.

The CGM files were reported as meeting the CALS MIL-D-28003 specification, however, none of the tools available in the AFCTB displayed the files completely correct.

8. Conclusions and Recommendations

The tape from Northrop Corporation had no reported errors in the structure or CALS header requirements. The physical structure of the tape meets the CALS MIL-STD-1840A requirements.

The IGES files on the tape had critical errors. This prevented them from being used by any of the utilities available in the AFCTB. The IGES files do not meet the CALS MIL-D-28000A specification.

The SGML files could be parsed by all of the utilities available in the AFCTB, without any reported errors. The SGML files meet the CALS MIL-M-28001A specification.

The Raster file meets the CALS MIL-R-28002A specification.

The CGM files were reported as meeting the CALS MIL-D-28003 requirements. However, none of the tools available in the AFCTB were able to import and display all of the files correctly. Several of the test utility programs reported bad files.

Because of the errors in the IGES files, the tape does not meet the CALS MIL-STD-1840A requirements.

9.   Appendix A - Tapetool Report Logs

9.1   Tape Catalog

Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release 9 (O)

```
  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                       for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII
```

Tue May 18 09:03:54 1993
MIL-STD-1840A File Catalog
File Set Directory: C:\CTN129\OVERLAND\SET009

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D002	Document Declaration	D/00260	02048/000001	Extracted
D003	Document Declaration	D/00260	02048/000001	Extracted
D001T001	TEXT	D/00260	02048/000001	Extracted
D001G002	DTD	D/00260	02048/000034	Extracted
D001H003	Output Specification	D/00260	02048/000001	Extracted
D001C004	CGM	F/00080	00800/000006	Extracted
D001C005	CGM	F/00080	00800/000002	Extracted
D001C006	CGM	F/00080	00800/000002	Extracted
D001C007	CGM	F/00080	00800/000002	Extracted
D001C008	CGM	F/00080	00800/000002	Extracted
D002T001	TEXT	D/00260	02048/000001	Extracted
D002G002	DTD	D/00260	02048/000034	Extracted
D002H003	Output Specification	D/00260	02048/000001	Extracted
D002Q004	IGES	F/00080	02000/000012	Extracted
D002Q005	IGES	F/00080	02000/000573	Extracted
D002Q006	IGES	F/00080	02000/000033	Extracted
D002Q007	IGES	F/00080	02000/000042	Extracted
D003T001	TEXT	D/00260	02048/000001	Extracted
D003G002	DTD	D/00260	02048/000034	Extracted
D003H003	Output Specification	D/00260	02048/000001	Extracted
D003R004	Raster	F/00128	02048/000007	Extracted

Catalog Process terminated normally.

9.2 Tape Evaluation Log

Air Force CALS Test Network Tape Evaluation - Version 1.2; Release 9 (O)
  Standards referenced:
    ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue May 18 09:03:06 1993

ANSI Tape Import Log

Rewinding tape to load point...

VOL1ITDS01   CONTROLLER   4

  Label Identifier: VOL1
  Volume Identifier: ITDS01
  Volume Accessibility:
  Owner Identifier:
  Label Standard Version: 4

HDR1D001   ITDS0100010001000100 93127 93127 000000   CONTROLLER

  Label Identifier: HDR1
  File Identifier: D001
  File Set Identifier: ITDS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0001
  Generation Version Number: 00
  Creation Date: 93127
  Expiration Date: 93127
  File Accessibility:
  Block Count: 000000
  Implementation Identifier: CONTROLLER

HDR2D0204800260   00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 1.

************ Tape Mark ***************

EOF1D001   ITDS0100010001000100 93127 93127 000001   CONTROLLER

   Label Identifier: EOF1
   File Identifier: D001
   File Set Identifier: ITDS01
   File Section Number: 0001
   File Sequence Number: 0001
   Generation Number: 0001
   Generation Version Number: 00
   Creation Date: 93127
   Expiration Date: 93127
   File Accessibility:
   Block Count: 000001
   Implementation Identifier: CONTROLLER

EOF2D0204800260   00

   Label Identifier: EOF2
   Recording Format: D
   Block Length: 02048
   Record Length: 00260
   Offset Length: 00

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

************ Tape Mark ***************

############ End of Volume ITDS01 ##############

############ End Of Tape File Set ##############

Rewinding tape to load point...

Tape Import Process terminated normally.

9.3   Tape File Set Validation Log

Air Force CALS Test Network File Set Evaluation - Version 1.2; Release 9 (O)

    Standards referenced:
      MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Tue May 18 09:03:54 1993
MIL-STD-1840A File Set Evaluation Log
File Set: SET009

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: John P. Kent, ITDS Chief Engineer, Northrop Corporation, B-2 Division, L591/GK
E. Washington Blvd., Pico Rivera, CA 90660-3765 (310) 948-0624
srcdocid: CALS_CGM_TEST2
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19930126
dstsys: Jeff Fisher, Integration Manager, USAF CALS Test Bed, HQ AFMC (I)/ENCT, Techne
4027 Col. Glenn Highway, Dayton, OH 45431-1601
dstdocid: STPRO25.7
dstrelid: NONE
dtetrn: 19930506
dlvacc: NONE
filcnt: T1, H1, G1, C5
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: JOB GUIDE
docttl: graphics test

Found file: D001T001
Extracting Text Header Records...
Evaluating Text Header Records...

srcdocid: CALS_CGM_TEST2
dstdocid: STPRO25.7
txtfilid: W
doccls: UNCLASSIFIED
notes: NONE

              <<<<< PART OF LOG FILE REMOVED HERE >>>>>

Evaluating numbering scheme...

No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

Found file: D002
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: John P. Kent, ITDS Chief Engineer, Northrop Corporation, B-2 Division, L591/GK
E. Washington Blvd., Pico Rivera, CA 90660-3765 (310) 948-0624
srcdocid: CALS_IGES_TEST2
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19930126
dstsys: Jeff Fisher, Integration Manager, USAF CALS Test Bed, HQ AFMC (I)/ENCT, Techne
4027 Col. Glenn Highway, Dayton, OH 45431-1601
dstdocid: STPRO25.9
dstrelid: NONE
dtetrn: 19930506
dlvacc: NONE
filcnt: T1, H1, G1, Q4
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: JOB GUIDE
docttl: graphics test

Found file: D002T001
Extracting Text Header Records...
Evaluating Text Header Records...

srcdocid: CALS_IGES_TEST2
dstdocid: STPRO25.9
txtfilid: W
doccls: UNCLASSIFIED
notes: NONE

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D002.

Found file: D003

srcsys: John P. Kent, ITDS Chief Engineer, Northrop Corporation, B-2 Division, L591/GK
E. Washington Blvd., Pico Rivera, CA 90660-3765 (310) 948-0624
srcdocid: CALS_RAS_TEST2
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19930126
dstsys: Jeff Fisher, Integration Manager, USAF CALS Test Bed, HQ AFMC (I)/ENCT, Techne
4027 Col. Glenn Highway, Dayton, OH 45431-1601
dstdocid: STPRO25.11
dstrelid: NONE
dtetrn: 19930506
dlvacc: NONE
filcnt: T1, H1, G1, R1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: JOB GUIDE
docttl: graphics test

Found file: D003T001

srcdocid: CALS_RAS_TEST2
dstdocid: STPRO25.11
txtfilid: W
doccls: UNCLASSIFIED
notes: NONE

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D003.
No errors were encountered in this File Set.
MIL-STD-1840A File Set Evaluation Complete.

10.   Appendix B - Detailed SGML Analysis

10.1   Parser Log

```
            SGML Document Type Definition Parser
                 An SGML System Conforming to
               International Standard ISO 8879
               Standard Generalized Markup Language


Log file: '9350.LOG'
SDO File: 'ctndecl.sdo'
Namecase General is yes.
Namecase Entity is no.
Parsing DTD file: '9350.dtd'

DTD0095: Start tag for element 'DATABASE' cannot be omitted if the
         element had declared content (CDATA, RCDATA, EMPTY).
DTD0095: Start tag for element 'MEDIUM' cannot be omitted if the
         element had declared content (CDATA, RCDATA, EMPTY).
DTD0096: The generic ID SHORTTITLE has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID CONTASSURPG has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID REFDOC has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID CFGPGE has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID COVERINDEX has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID STALOC has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID TESTCODE has not been used in any content
         model, inclusion, or as a doctype element.
This DTD conforms to the ISO 8879 standard

DTO file '9350.DTO' created

closing statistics:
    Capacity points:              72200
    Bytes of DTO file string space:  12765
    SGML descriptor blocks:        7138

Document Type Definition is compliant and parsed normally.

Program status code: 0.
```

10.2 Validator Parser Log

```
<!-- Entity has no name, system id or public id in formal file -->.
<!-- **Warning** in "i:\9350\9350.sgm", line 516:
   An EMPTY element must have a start tag and must not have an end tag.
   Therefore, it is inappropriate to specify an omissible start tag or an
   inomissible end tag in its declaration.
   The element is "DATABASE".
   <!ELEMENT database          - -         EMPTY        >
                                           ^^^^^
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 598:
   An EMPTY element must have a start tag and must not have an end tag.
   Therefore, it is inappropriate to specify an omissible start tag or an
   inomissible end tag in its declaration.
   The element is "MEDIUM".
   <!ELEMENT medium            - -         EMPTY>
                                           ^^^^^
-->
<!-- **Warning**:
   An element with mixed content should permit data characters ("#PCDATA")
   everywhere.
   The element being declared is "NOTICE".
   ((((#PCDATA | ftnref | xref | indxflag | verbatim |
      ^^^^^^
-->
<!-- **Warning**:
   An element with mixed content should permit data characters ("#PCDATA")
   everywhere.
   The element being declared is "INTERNATLSTD".
   ((((#PCDATA | ftnref | xref | indxflag | verbatim |
      ^^^^^^
-->
<!-- **Warning**:
   An element with mixed content should permit data characters ("#PCDATA")
   everywhere.
   The element being declared is "HOWTOUSE".
   ((((#PCDATA | ftnref | xref | indxflag | verbatim |
      ^^^^^^
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1360:
   An element with mixed content should permit data characters ("#PCDATA")
   everywhere.
   The element being declared is "CALLOUT".
   <!ELEMENT callout           - -         (#PCDATA | graphic)        >
                                                     /\
```

'

```
-->
<!-- **Warning**:
   An element with mixed content should permit data characters ("#PCDATA")
   everywhere.
   The element being declared is "ENTRY".
   ((((#PCDATA | ftnref | xref | indxflag | verbatim |
       ^^^^^^
-->
<!-- **Warning**:
   An element with mixed content should permit data characters ("#PCDATA")
   everywhere.
   The element being declared is "FTNOTE".
   ((((#PCDATA | ftnref | xref | indxflag | verbatim |
       ^^^^^^
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1611:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "CFGPGE".
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1611:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "CONTASSURPG".
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1611:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "COVERINDEX".
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1611:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "ENTRYTBL".
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1611:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "REFDOC".
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1611:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "SHORTTITLE".
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1611:
   An element is not allowed in the document instance because it does not
```

```
   appear in any accessible content model or it is completely excluded.
   The element is "STALOC".
-->
<!-- **Warning** in "i:\9350\9350.sgm", line 1611:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "TESTCODE".
-->
<!-- 16 warnings reported. -->
```
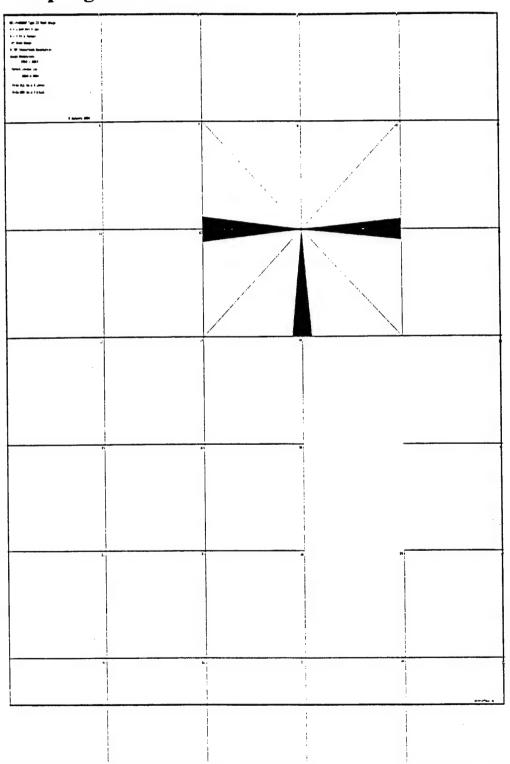
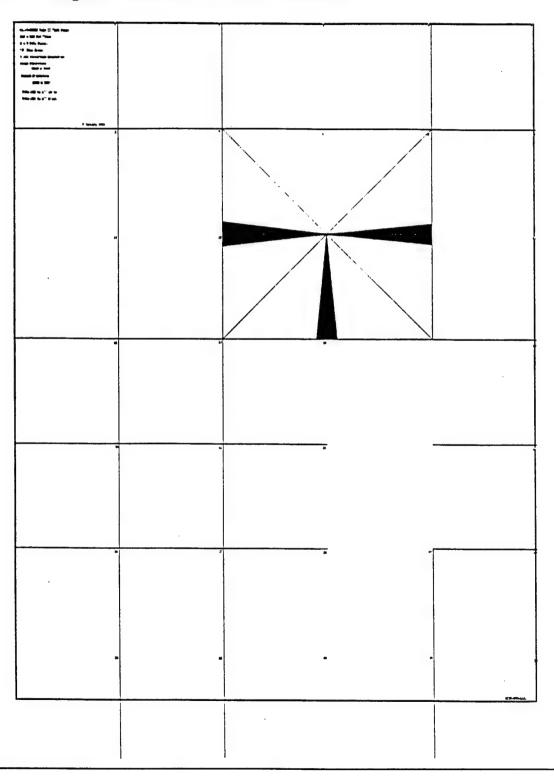# 11. Appendix C - Detailed Raster Analysis

11.1 File D003R004
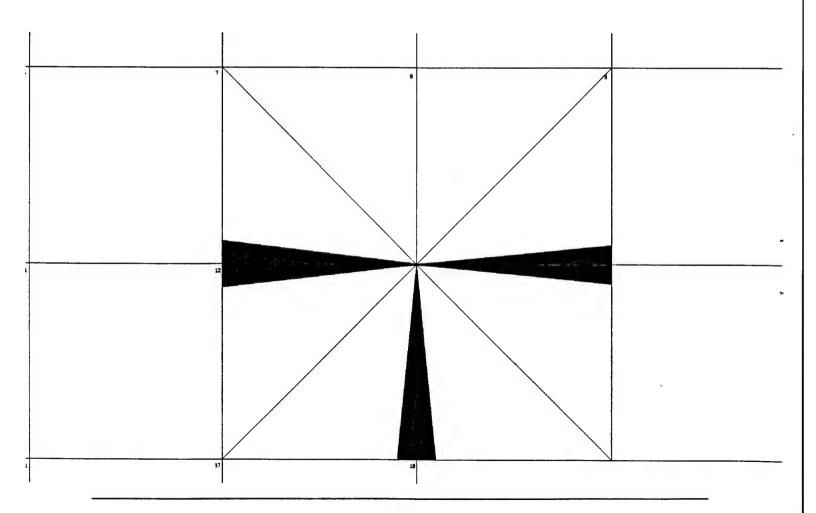
11.1.1 Output HiJaak for Windows

11.1.2 Output g42tiff/IslandPaint

11.1.3   Output HiJaak/Ventura Publisher

11.1.4 Output IGESView - Detail

11.1.5   Output IGESView - Detail

```
MIL-R-28002 Type II Test Image

512 x 512 Pel Tiles

5 x 7 Tile Format

"A" Size Image

@ 300 lines/inch Resolution

Image Dimensions
        2550 x 3300

 Format Dimensions

        2560 x 3584


 Tile #19 is all white

 Tile #24 is all black
```

1

2-January-1991

6

12. Appendix E - Detailed CGM Analysis

12.1 File D001C004

12.1.1 Parser Log MetaCheck

```
MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  09:59:09

Metafile Examined    : i:\9350\d001c004.cgm

Pictures Examined    : All
Elements Examined    : All
Bytes     Examined   : All


====================== Trace Report =======================

Tracing not selected.

============= CGM Conformance Violation Report =============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

No profile discrepancies detected.

================ Conformance Summary Report ================

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  09:59:10

Name of CGM under test: i:\9350\d001c004.cgm
Encoding               : Binary

Pictures Examined    : All
Elements Examined    : All
Bytes     Examined   : All


BEGIN METAFILE string : "allreal.cgm"
METAFILE DESCRIPTION  : "NORTHROP B2 ITDS GEF, MIL-D-28003/BASIC-1"
```

Picture 1 starts at octet offset 202; string contains: "Picture 1"

Conformance Summary : This file conforms to the CGM specification.
                        This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

          1 Pictures Tested
        272 Elements Tested
       3980 Octets Tested

          ===================================
          | No Errors Were Detected |
          ===================================
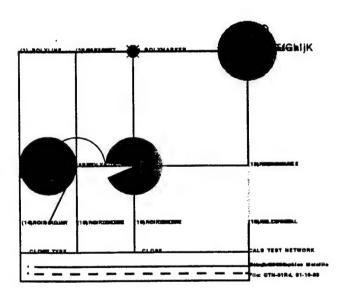
================ End of Conformance Report ==================
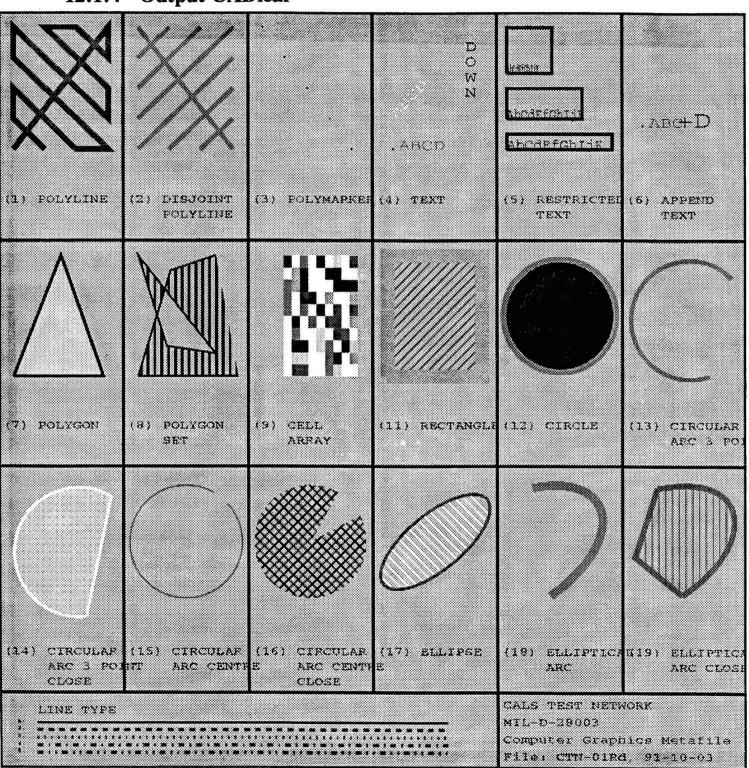
12.1.2 validcgm Log

Analysis for file d001c004.cgm using table table
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 4) not yet seen
(14.1, 0)   (3, 6, 2)   Clip Indicator OFF
MILSPEC 28003 error: illegal hatch index
(173, 2354)   (5, 24, 2)   Hatch Index 6
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 8) occurred 1 time
(1, 9) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(1, 13) occurred 1 time
(2, 2) occurred 1 time
(2, 6) occurred 1 time

```
(2,  7)  occurred 1 time
(3,  2)  occurred 1 time
(3,  6)  occurred 1 time
(3,  6)  occurred illegally 1 time
(4,  1)  occurred 32 times
(4,  3)  occurred 5 times
(4,  4)  occurred 50 times
(4,  7)  occurred 3 times
(4,  9)  occurred 1 time
(4, 12)  occurred 2 times
(4, 15)  occurred 3 times
(4, 16)  occurred 2 times
(4, 17)  occurred 2 times
(4, 18)  occurred 2 times
(4, 19)  occurred 1 time
(5,  2)  occurred 17 times
(5,  3)  occurred 17 times
(5,  4)  occurred 17 times
(5,  6)  occurred 5 times
(5,  7)  occurred 5 times
(5,  8)  occurred 5 times
(5, 10)  occurred 3 times
(5, 12)  occurred 5 times
(5, 13)  occurred 1 time
(5, 14)  occurred 7 times
(5, 15)  occurred 5 times
(5, 16)  occurred 7 times
(5, 17)  occurred 4 times
(5, 18)  occurred 1 time
(5, 22)  occurred 10 times
(5, 23)  occurred 8 times
(5, 24)  occurred 7 times
(5, 27)  occurred 2 times
(5, 28)  occurred 2 times
(5, 29)  occurred 2 times
(5, 30)  occurred 10 times
(5, 31)  occurred 7 times
(5, 34)  occurred 1 time
```

12.1.3 Output Harvard Graphics

12.1.4   Output CADleaf

12.1.5 Output cgm2draw/IslandDraw

) POLYLINE	(2) DISJOINT POLYLINE	(3) POLYMARKER	(4) TEXT	(5) RESTRICTED TEXT	(6) APPEND TEXT
) POLYGON	(8) POLYGON SET	(9) CELL ARRAY	(11) RECTANGLE	(12) CIRCLE	(13) CIRCULAR ARC 3 PC
4) CIRCULAR ARC 3 POINT CLOSE	(15) CIRCULAR ARC CENTRE	(16) CIRCULAR ARC CENTRE CLOSE	(17) ELLIPSE	(18) ELLIPTICAL ARC	(19) ELLIPTIC/ ARC CLOS

LINE TYPE

CALS TEST NETWORK
MIL-D-28003
Computer Graphics Metafile
File: CTN-01Rd, 91-10-03

12.1.6 Output IslandDraw

				AbCdEfGhIjK	
			,ABCD	AbCdEfGhIjK	.ABC +D
			.ABCD	AbCdEfGhIjK	
POLYLINE	(2) DISJOINT POLYLINE	(3) POLYMARKER	(4) TEXT	(5) RESTRICTED TEXT	(6) APPEND TEXT
POLYGON	(8) POLYGON SET	(9) CELL ARRAY	(11) RECTANGLE	(12) CIRCLE	(13) CIRCULAR ARC 3 POINT
) CIRCULAR ARC 3 POINT CLOSE	(15) CIRCULAR ARC CENTRE	(16) CIRCULAR ARC CENTRE CLOSE	(17) ELLIPSE	(18) ELLIPTICAL ARC	(19) ELLIPTICAL ARC CLOSE

LINE TYPE

CALS TEST NETWORK
MIL-D-28003
Computer Graphics Metafile
File: CTN-01Rd, 91-10-03

34

12.2   File D001C005

12.2.1   Parser Log MetaCheck

```
MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  09:59:37

Metafile Examined    : i:\9350\d001c005.cgm

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

====================== Trace Report =======================

Tracing not selected.

============= CGM Conformance Violation Report ==============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

No profile discrepancies detected.

================ Conformance Summary Report ================

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  09:59:38

Name of CGM under test: i:\9350\d001c005.cgm
Encoding             : Binary

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

BEGIN METAFILE string : "arcs.cgm"
METAFILE DESCRIPTION  : "NORTHROP B2 ITDS GEF, MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 154; string contains: "Picture 1"

Conformance Summary  :  This file conforms to the CGM specification.
```

This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

    1 Pictures Tested
   62 Elements Tested
  942 Octets Tested

```
==================================
|   No Errors Were Detected      |
==================================
```
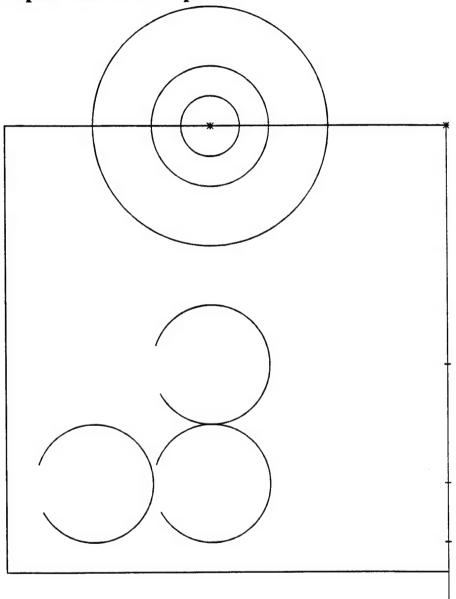
================= End of Conformance Report ==================
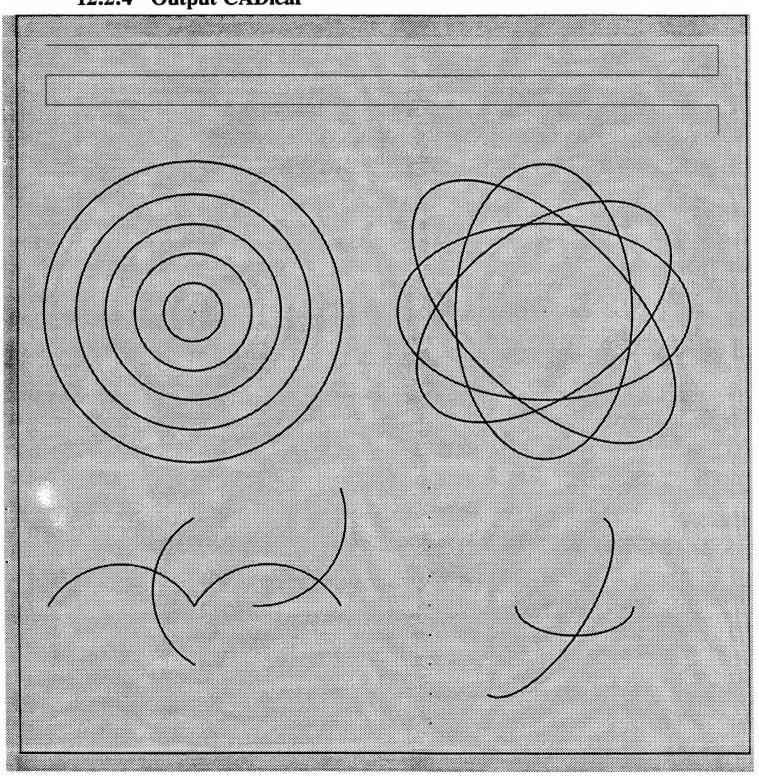
12.2.2 validcgm Log

```
Analysis for file d001c005.cgm using table table
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 4) not yet seen
(14.1, 0)        (3, 6, 2)      Clip Indicator OFF
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 8) occurred 1 time
(1, 9) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(1, 13) occurred 1 time
(2, 2) occurred 1 time
(2, 6) occurred 1 time
(2, 7) occurred 1 time
(3, 2) occurred 1 time
(3, 6) occurred 1 time
(3, 6) occurred illegally 1 time
(4, 1) occurred 2 times
```

```
(4,  3) occurred 3 times
(4, 12) occurred 5 times
(4, 15) occurred 4 times
(4, 17) occurred 4 times
(4, 18) occurred 2 times
(5,  2) occurred 5 times
(5,  3) occurred 5 times
(5,  4) occurred 4 times
(5,  6) occurred 2 times
(5,  7) occurred 1 time
(5,  8) occurred 1 time
(5, 22) occurred 1 time
(5, 23) occurred 1 time
(5, 34) occurred 1 time
```
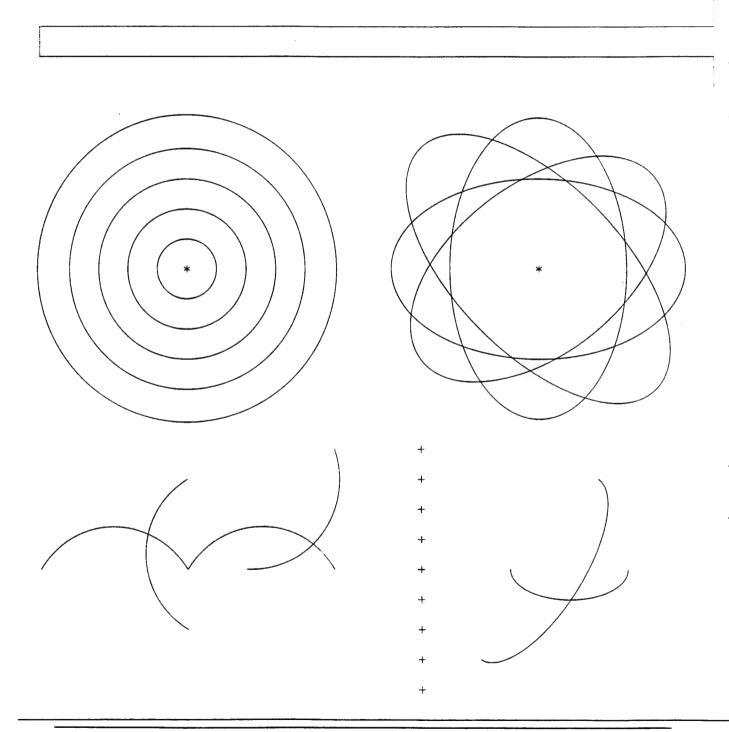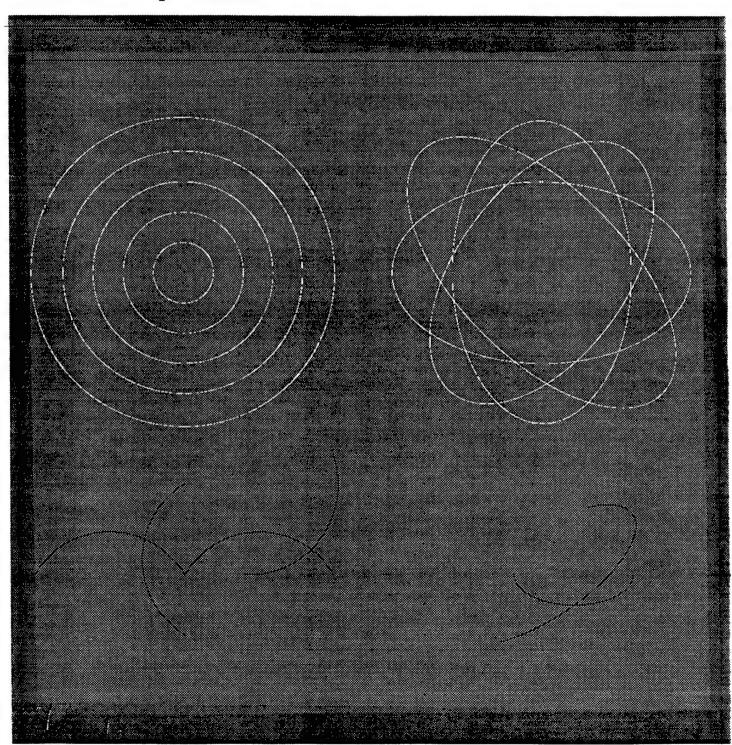
12.2.3 Output Harvard Graphics

12.2.4   Output CADleaf

AFCTN Test Report
94-018

AFCTB Test Report
93-050

12.2.5   Output cgm2draw/IslandDraw

12.2.6 Output IslandDraw

12.3   File D001C006

12.3.1   Parser Log MetaCheck

```
MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  10:00:05


Metafile Examined    : i:\9350\d001c006.cgm

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All


====================== Trace Report =========================

Tracing not selected.

============= CGM Conformance Violation Report ==============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

No profile discrepancies detected.

================ Conformance Summary Report =================

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  10:00:05

Name of CGM under test: i:\9350\d001c006.cgm
Encoding             : Binary

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

BEGIN METAFILE string : "fills.cgm"
METAFILE DESCRIPTION  : "NORTHROP B2 ITDS GEF, MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 154; string contains: "Picture 1"

Conformance Summary  :  This file conforms to the CGM specification.
```

This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

       1 Pictures Tested
      56 Elements Tested
     856 Octets Tested

```
====================================
|     No Errors Were Detected     |
====================================
```

================ End of Conformance Report ==================

12.3.2   validcgm Log

Analysis for file d001c006.cgm using table table
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 4) not yet seen
(14.1, 0)   (3, 6, 2)   Clip Indicator OFF
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 8) occurred 1 time
(1, 9) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(1, 13) occurred 1 time
(2, 2) occurred 1 time
(2, 6) occurred 1 time
(2, 7) occurred 1 time
(3, 2) occurred 1 time
(3, 6) occurred 1 time
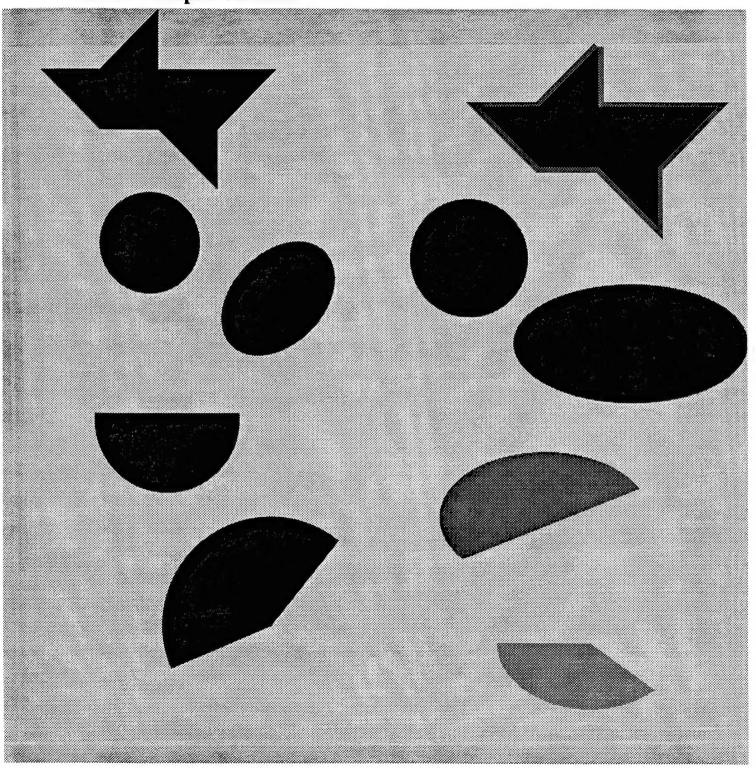(3, 6) occurred illegally 1 time
(4, 1) occurred 1 time

(4, 7) occurred 2 times
(4, 12) occurred 2 times
(4, 16) occurred 2 times
(4, 17) occurred 2 times
(4, 19) occurred 2 times
(5, 2) occurred 1 time
(5, 3) occurred 1 time
(5, 4) occurred 1 time
(5, 22) occurred 6 times
(5, 23) occurred 6 times
(5, 24) occurred 1 time
(5, 30) occurred 6 times
(5, 31) occurred 1 time
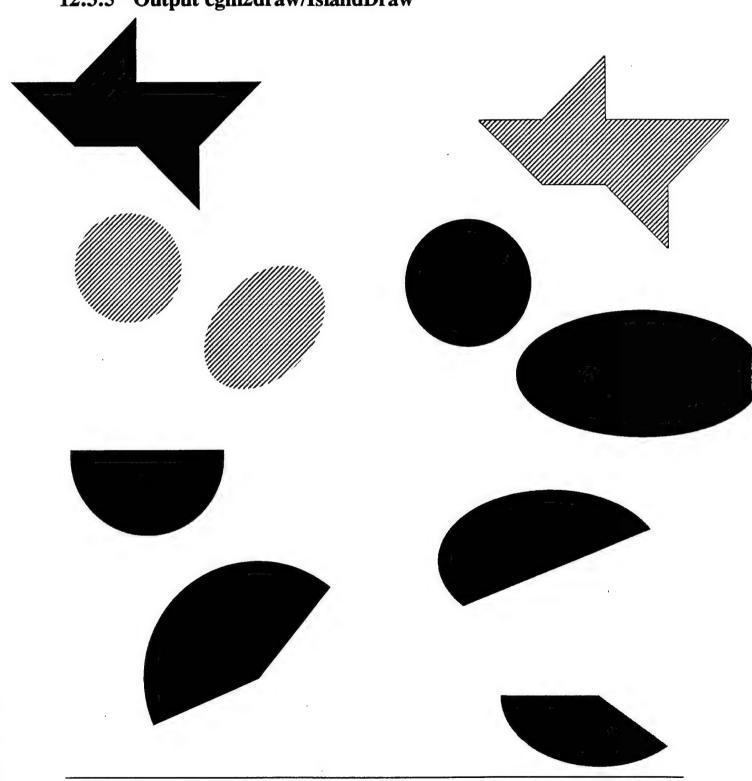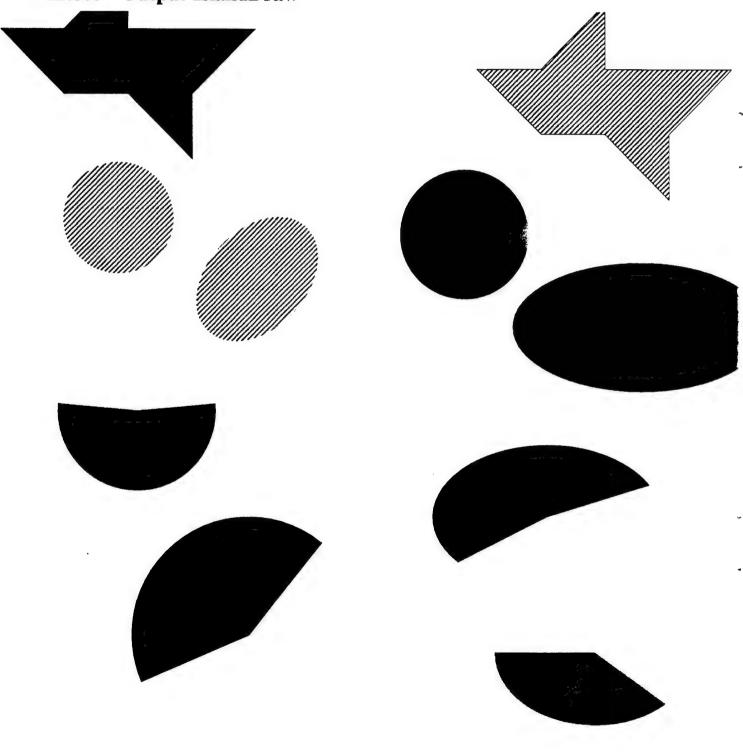(5, 34) occurred 1 time

12.3.3 Output Harvard Graphics

12.3.4 Output CADleaf

12.3.5 Output cgm2draw/IslandDraw

12.3.6   Output IslandDraw

12.4   File D001C007

12.4.1   Parser Log MetaCheck

```
MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  10:00:32

Metafile Examined     : i:\9350\d001c007.cgm

Pictures Examined     : All
Elements Examined     : All
Bytes     Examined     : All


====================== Trace Report =========================

Tracing not selected.

============== CGM Conformance Violation Report ==============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

No profile discrepancies detected.

================ Conformance Summary Report =================

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  10:00:32

Name of CGM under test: i:\9350\d001c007.cgm
Encoding              : Binary

Pictures Examined     : All
Elements Examined     : All
Bytes     Examined     : All

BEGIN METAFILE string : "lines.cgm"
METAFILE DESCRIPTION  : "NORTHROP B2 ITDS GEF, MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 130; string contains: "Picture 1"

Private values encountered in CGM
```

Conformance Summary : This file conforms to the CGM specification.
                        This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

          1 Pictures Tested
         71 Elements Tested
        664 Octets Tested

```
===================================
|    No Errors Were Detected    |
===================================
```

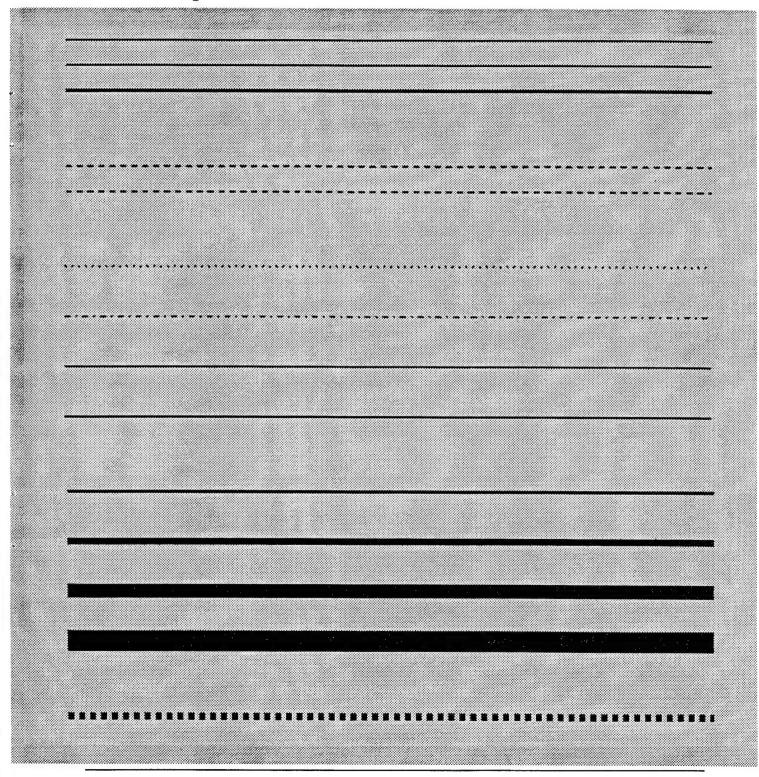================ End of Conformance Report ==================

12.4.2   validcgm Log

```
Analysis for file d001c007.cgm using table table
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 4) not yet seen
(13.1, 0)       (3, 6, 2)      Clip Indicator OFF
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 8) occurred 1 time
(1, 9) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(2, 2) occurred 1 time
(2, 6) occurred 1 time
(2, 7) occurred 1 time
(3, 2) occurred 1 time
(3, 6) occurred 1 time
(3, 6) occurred illegally 1 time
```

(4, 1) occurred 14 times
(5, 2) occurred 12 times
(5, 3) occurred 12 times (5, 4) occurred 12 times (5, 34) occurred 1 time

12.4.3 Output Harvard Graphics

12.4.4 Output CADleaf

12.4.5 Output cgm2draw/IslandDraw

12.4.6   Output IslandDraw

12.5   File D001C008

12.5.1   Parser Log MetaCheck

```
MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  10:00:54

Metafile Examined     : i:\9350\d001c008.cgm

Pictures Examined     : All
Elements Examined     : All
Bytes     Examined    : All

====================== Trace Report =======================

Tracing not selected.

============= CGM Conformance Violation Report ==============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

No profile discrepancies detected.

================ Conformance Summary Report ================

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/18/93     Time:  10:00:55

Name of CGM under test: i:\9350\d001c008.cgm
Encoding                : Binary

Pictures Examined     : All
Elements Examined     : All
Bytes     Examined    : All

BEGIN METAFILE string : "text.cgm"
METAFILE DESCRIPTION  : "NORTHROP B2 ITDS GEF, MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 178; string contains: "Picture 1"

Conformance Summary  :  This file conforms to the CGM specification.
```

This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

    1 Pictures Tested
   67 Elements Tested
  902 Octets Tested

```
==================================
|     No Errors Were Detected     |
==================================
```

================ End of Conformance Report ==================

12.5.2 validcgm Log

```
Analysis for file d001c008.cgm using table table
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 4) not yet seen
(14.1, 0)         (3, 6, 2)      Clip Indicator OFF
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 8) occurred 1 time
(1, 9) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(1, 13) occurred 1 time
(2, 2) occurred 1 time
(2, 6) occurred 1 time
(2, 7) occurred 1 time
(3, 2) occurred 1 time
(3, 6) occurred 1 time
(3, 6) occurred illegally 1 time
(4, 4) occurred 17 times
```

(5, 10) occurred 3 times
(5, 12) occurred 3 times
(5, 13) occurred 3 times
(5, 14) occurred 2 times
(5, 15) occurred 4 times
(5, 16) occurred 5 times
(5, 17) occurred 4 times
(5, 18) occurred 4 times
(5, 34) occurred 1 time

12.5.3   Output Harvard Graphics

BOLD 45

RIGHCENEXEIRDPAVAXTEXT

TEXT .12

BOLD .15

SPACING 2

EXPANSION FACTOR 1.5

TEXT COLOR RED

12.5.4 Output CADleaf

CENTER TEXT

RIGHT TEXT

ABCD
EFG
HIJK
LMOP
QRST
UVW
XYZ

BOLD 45

DOWN TEXT

TXET PU

TEXT .12

BOLD .15

SPACING 2

EXPANSION FACTOR 1.5

TEXT COLOR RED

12.5.5 Output cgm2draw/IslandDraw

CENTER TEXT

RIGHT TEXT

ABCD
EFG
HIJK
LMOP
QRST
UVW
XYZ

BOLD 45

DOWN
TEXT

TEXT

TEXT UP

TEXT .12

BOLD .15

S P A C I N G   2

EXPANSION FACTOR 1.5

TEXT COLOR RED

12.5.6 Output IslandDraw

RIGHT TEXT

ABCD
EFG
HIJK
LMOP
QRST
UVW
XYZ

DOWN TEXTTEXT

BOLD 45

TEXT .12

BOLD .15

SPACING 2

EXPANSION FACTOR 1.5

TEXT COLOR RED